DOCUMENT RESUME

ED 112 836 IR 002 529

AUTHOR Kovac, Roberta J.; Pollack, Michael A.
TITLE Simulation/Gaming in Teacher Education: An Annotated Bibliography of Selected Sources for Use in the Development of Teacher Training Programs.
INSTITUTION Indiana Univ., Bloomington. School of Education. Center for Invention and Development.
NOTE 40p.

EDRS PRICE MF-$0.76 HC-$1.95 Plus Postage
DESCRIPTORS *Annotated Bibliographies; Classroom Materials; *Educational Games; Higher Education; *Simulation; *Teacher Education; Teachers; *Teaching Experience
IDENTIFIERS Center for Invention and Development

ABSTRACT

The Center for Invention and Development has compiled an annotated bibliography which identifies sources and sets parameters in the use of games and simulation in the classroom. The introduction attempts to clarify the difference between simulation and gaming and the relative position of each in teacher education. There are 134 items which cover general references, six journals and newsletters, and 23 simulations and games. Most items have been published or developed since 1960. The source of a large percentage of the references are documents from Resources in Education (RIE) and Current Index to Journals in Education (CIJE). (Author/DS)

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SIMULATION/GAMING IN TEACHER EDUCATION: AN ANNOTATED BIBLIOGRAPHY OF SELECTED SOURCES FOR USE IN THE DEVELOPMENT OF TEACHER TRAINING PROGRAMS

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FOREWORD

Every student has to go through directed observation and student teaching. However, much time is wasted on everyone's part in much of the current practice and certainly supervision of student teachers is inadequate, often carried out under circumstances that prevent identifying cause and effect relationships. Post hoc supervision often is little more than a generalized discussion rather than a clinical analysis.

There no doubt is a place for direct field experiences but those experiences, sharply curtailed in time, can be made much more meaningful by expert guidance of the student through selected simulations. Time is likely to be a very precious commodity in these programs and simulation is certainly a way to save it. What we need is a judicious mix of simulated and field experiences. The Center for Invention and Development will concentrate on creating a bank of simulation experiences during the coming year.

With the completion of this bibliography, which serves the purpose of identifying resources and setting parameters, the Center will concentrate in the winter and spring of 1973 on developing a more systematic and in-depth treatment on the section in the bibliography regarding Simulations & Games, including both descriptive and judgmental evaluations of products. In addition, the bibliography will be up-dated as often as proves necessary. If anyone is interested in receiving these additions and/or evaluation reports, simply write to:

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We would also like to hear from anyone who has developed an unpublished simulation or game useable in teacher education programs, for evaluation and inclusion in our bibliographic additions.

TABLE
OF
CONTENTS

FOREWORD I

TABLE OF CONTENTS. II

INTRODUCTION III

BIBLIOGRAPHIES 1

GENERAL REFERENCES 2

JOURNALS AND NEWSLETTERS 26

SIMULATIONS AND GAMES. 27

Compilers' Note: The sources of annotations in this bibliography are from one of the following: Research in Education (RIE); The Current Index to Journals in Education (CIJE); The Revised R&D Annotated Bibliography compiled by the Research and Development Center for Teacher Education at the University of Texas at Austin; Paul A. Twelker's Instructional Simulation Systems and "Basic Reference Shelf on Simulation;" Zuckerman & Horn's The Guide to Simulation Games for Education and Training; The Center for Invention and Development (CID); or some statement by the author or publisher/producer. The entry in parenthesis at the end of each annotation indicates the source.

INTRODUCTION

Reviewing the literature on simulation and/or gaming with the intention of uncovering accepted and common definitions of these terms is a fruitless endeavor. Some authors consider them roughly synonymous, as in Morris Sanders' adage: "Simulation should be used when talking to administrators and games should be used when talking to students."[1] Others consider them as two distinct entities, where simulation refers to some simplification of reality while, hopefully, maintaining the essence of that reality, whereas games are "competitive interactions among participants to achieve pre-specified goals . . . [without necessarily] replicating real world behavior."[2] Still others enjoy using the compound expression "simulation games" in their attempts to shed darkness.

Applying Englemann's methods of concept analysis, a few common denominators or traits begin to surface. The two pillars of simulation are involvement or role-playing on the one hand, and a simplified but minimally distorted reflection of some given reality on the other. Thus one frequently hears the term "role-playing simulation" or "interaction simulations". As Tansey states, "the whole thing about simulation is what you are, not what you do if: involvement is the keynote."[3] This rules out, for example, such instructional devices as workbooks and models: Workbooks call for student discussion rather than role-playing. Models, although crystallizing some set of relationships, call for objective analysis and not direct involvement.

The concept of games is adequately presented by Charles Abt: "Games are contests (play) among adversaries (players) operating under constraints (rules) for an objective (winning, victory or pay-off)."[4]

Juxtaposing these characteristics of simulations and games, various relationships arise. First are the non-simulation games, which Twelker defines as "competitive learning contexts in which participant success is determined by the degree of subject matter comprehension--of information, concepts, generalizations, and/or theories--demonstrated during

1. Sanders, Norris. "Changing Strategies of Instruction: Three Case Examples," NCSS Yearbook, 1969, pp. 139-173.

2. Twelker, Paul A., and Layden, Ken. Educational Simulation/Gaming. Stanford, Calif.: Stanford University, ERIC Clearinghouse on Media and Technology, August, 1972, p. 1.

3. As quoted in: Cruickshank, Donald R. Simulation as an Instructional Alternative in Teacher Education. ATE Research Bulletin No. 8. Washington, D.C.: Assn. of Teacher Educators in Cooperation with ERIC Clearinghouse on Teacher Education, 1971, p. 8.

4. Abt, Clark C., "Games for Learning," Simulation Games in Learning, Ed. Sarane S. Boocock and E.O. Schild (Beverly Hills, Calif.: Sage Publications, Inc.), 1968, pp. 67-68.

game play."[5] Next are simulation games, or "learning contexts in which the participant responds . . . as if he were in the actual system of interaction being simulated. The interaction is structured by rules and physical circumstances . . . inter-personal simulation games combine the competitive aspects of gaming with the reality replication of simulation to allow the participant a personal glimpse of how it 'feels' to be in the dynamics of real system interpersonal interaction."[6] Finally, a non-game simulation would correspond to an open-ended role playing situation where competition between players is reduced. To adequately account for these various combinations and to bring forth their interrelationship, it is becoming increasingly popular to speak of simulation/gaming, where the slash represents an and/or relationship.

Glazier offers a set of media attributes or characteristics for simulation/gaming techniques. Games, he states, "[lend themselves] to easily-quantifiable subject matter, such as math, science, [and] language . . . [and emphasize] manipulation of concrete variables . . . [while simulations are] particularly appropriate where qualitative factors are paramount . . . [and emphasize] 'human factors' like: persuasion, power, communication, resource control . . . decision-making, and 'psyching-out' actions of others."[7] In the area of teacher education, it follows, instructional activities would lend themselves to games while behavioral problems in the classroom could be more easily mediated through simulations. Community relationships as well as school administration studies pose excellent opportunities for a combination simulation game.

The question as to where simulation/gaming can be incorporated into teacher education programs is best left with individual curriculum developers, since education programs are of such diversity and scope. Some delineation, however, of advantages and limitations in the utilization of these techniques will help clarify their possibilities.

The best reason for refraining from any type of dogmatic statement regarding the advantages of simulation/gaming is the paucity of existing research. No systematic attempts at researching the various facets of these techniques have yet been undertaken. As elsewhere, there exist only a few isolated and unconnected studies with conflicting results, showing either no or small significant differences in the variables studied. One of the more recent studies was conducted by Edmund Emmer at the R&D Center for Teacher Education at the University of Texas in Austin. The purpose of his study was to "determine whether instructional behavior learned during a series of simulated teaching experiences using

5. Twelker, p. 1.

6. Twelker, p. 2.

7. Glazier, Ray, How to Design Educational Games, Abt Associates, Inc., Cambridge, Mass., 1969, p. 4.

peers as students would transfer to a setting in which 'real' pupils were students."[8] The definition used in this study for simulation, however, was different from the one here used, stating that "simulated teaching involves the presentation of a lesson in which a teacher practices some instructional behavior or teaching style in a small group and subsequently receives feedback about aspects of his behavior or about the effects of his instruction."[9] Nonetheless, the results of this report were encouraging, showing that some transfer did take place--but the findings must remain inconclusive until duplicate experiments are run.

Therefore the suggestions which follow regarding the utilization of simulation/gaming techniques are merely hunches. The pamphlet by Cruickshank[10] on simulation identifies the most common justifications for simulation/gaming in teacher education; 1) simulation permits students to engage frequent and severe problems that might not occur during field work; 2) simulation/gaming can "often provide experiences in a low-cost model of a high-cost environment,"[11] (that is, they can be cost-effective); 3) critical in this sense, simulation/gaming can compress time by presenting the student teacher with more decision-points or problem situations in one session than might be experienced in an entire semester of field work. Space can also be compressed since simulation/gaming can present a variety of school environments, such as inner city and suburban schools, whereas a student teacher normally is limited to one field experience; 4) simulation/gaming has the potential for immediate feedback, making it possible to identify cause-effect relationships for the student. Supervision of field experiences is often difficult and consequently minimal, making diagnostic analysis nearly impossible, thereby reducing the ability of the program director to make applicable feedback.

Marten, Buffie, and Dunfee state that "simulation is a type of readiness activity in which students develop an appreciation and understanding of the total role played by the teacher."[12] In addition, simulation/gaming allows emphasis to be put on decision making. It is better than

8. Emmer, Edmund T. "Transfer of Instructional Behavior and Performance Acquired in Simulated Teaching." Report Series No. 50. Austin: University of Texas, Research and Development Center for Teacher Education, May, 1970, p. 1.

9. Emmer, p. 1.

10. Cruickshank, Donald R. Simulation as an Instructional Alternative in Teacher Education. ATE Research Bulletin No. 8. Washington, D.C.: Assn. of Teacher Educators in Cooperation with ERIC Clearinghouse on Teacher Education, 1971.

11. Cruickshank, p. 20.

12. Marten, Milton; Dunfee, Maxine; Buffie, Edward; and McQuigg, Bruce. "Simulation--Focus on Decision Making." Viewpoints, 46(1), January 70, 1-48, 115-173, p. 5.

group discussions, since if the student is "'playing' the part of the teacher and a decision is called for he will have to take a stand one way or another."[13]

On the other hand, simulation/gaming techniques, by their very definition, limit the number and intensity of variables, and thereby alter the prototype reality. The size of this discrepancy depends on how the particular simulation and/or game was designed. That is, how many variables were included and to what extent they capture the essence of the situation or topic. A large discrepancy can easily give rise to a credibility gap. Common sense indicates that some "judicious mix" of simulation/gaming with student teaching experiences is called for.

The advantages inherent in simulation/gaming techniques are probably best utilized when used as a bridge between theoretical method courses and student-teaching internships. Beginning student teachers are likely to abandon principles learned in theoretical courses when they are dumped "green" into a real classroom with real students. This difference often leads to resentment on the part of the student teachers to what seems to them irrelevant course work. Using simulation/gaming techniques as a bridge between courses and field work can make this transition more meaningful and smooth. The educator has the opportunity to control the dominant variables so that theoretical formulations need not be lost. The main intention in providing student teachers with theoretical constructs is to give them a net with which they can catch and understand some segment of reality. Too often nets or frameworks are entangled upon confrontation with reality. Through simulation/gaming, the student can walk into the water slowly and perhaps the number of drownings can be reduced. Also, the potential for immediate feedback can give the instructor the possibility of demonstrating to the student just how his concepts can be applied. This type of reinforcement is bound to make more sense and seem more relevant to the students involved. Finally, this taste of reality can sensitize students to the different pressures common in a classroom situation, thereby identifying factors to look for when they student teach. In the language of perception, simulation/gaming techniques used in this context can provide a "set", an "advance organizer", which directs the attention of the student to those areas considered most important in the field experiences.

M. Pollack

13. Marten, Milton, et al. p. 53.

VI

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   "This bibliography lists 130 books, articles, reports, theses and other papers--published and unpublished--on the topic of simulation. Dates are from 1953-1969, most of them since 1965." (RIE)

2. Hickok, W.H., editor. A Bibliography of Research Studies on Games and Simulations. Portland, Oregon: Northwest Regional Education Lab., 1967

3. Kidder, Steven J. Simulation Games: Practical References, Potential Use, Selected Bibliography. Baltimore, Maryland: Johns Hopkins University, Center for the Study of Social Organization of Schools, August, 1971. (ED054486)
   "Several recently published books on simulation and games are briefly discussed. Selected research studies and demonstration projects are examined to show the potential of simulation and gaming for teaching and training and for the study of social and psychological processes. The bibliography lists 113 publications which should lead the reader to practical information on games." (RIE)

4. Schaefer, James., editor. A Bibliography of References Used in the Preparation of Nine Model Teacher Education Programs. Washington, D.C.: ERIC Clearinghouse on Teacher Education, August, 1969. (ED031460)
   "Contains a section on educational technology with references under instructional media, computer-assisted instruction, programmed instruction, and educational simulation and games." (RIE)

5. Tansey, P.J., and Unwin, Derick, editors. "Sources in Simulation and Academic Gaming: An Annotated Bibliography." British Journal of Educational Studies, 17(2), June 1969, 193-208.
   "A selected bibliography geared to public school and college instructors which is indexed and contains 87 references." (Twelker)

6. Twelker, Paul A., editor. Instructional Simulation Systems, An Annotated Bibliography. Corvallis, Oregon: Continuing Education Publications, 1969.
   "This document lists about 1500 references on simulation and gaming and includes annotations or abstracts for the majority

of the listings. Simulation exercises and games are described in a special format to indicate the subject, learner, population, price (if any), materials furnished, etc. . . it references the broad field of simulation and gaming in education, the social and behavioral sciences, the social studies, business and research in all areas." (ERIC Paper, Aug. 1972)

7. Werner, Roland, and Joan T., editors. Bibliography of Simulations: Social Systems and Education. La Jolla, California: Western Behavioral Sciences Institute, January, 1969.
"A 2000-item listing including references on social systems simulations, models, techniques, language, educational games, and computer use. The references are grouped according to topic." (Twelker)

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"The Guide presents complete descriptions of over 600 simulations and games based on the most complete survey of simulation games ever undertaken. It includes (1) complete descriptions of over 600 simulations and games for all levels and subject matters, (2) how to introduce simulation games in your courses, (3) how to help students make their own simulation games, (4) how to get personal help in learning about simulation games, (5) a complete demonstration session you can use to introduce simulation gaming to teachers, parents, students." (Information Resources, Inc.)

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experienced both techniques. Results indicate a positive transfer effect between the game and the IR system." (RIE)

11. American Assn. of Colleges for Teacher Education. Professional Teacher Education II: A Programmed Design Developed by the AACTE Teacher Education and Media Project. Washington, D.C.: American Assn. of Colleges for Teacher Education, 1968. (ED026294)

"The American Assn. of Colleges for Teacher Education Media Project was developed to determine whether (1) the gap between the producer and the user of educational innovations could be bridged: (2) a meaningful way to present the results of educational research to the user could be designed, and (3) the integrated and functional use of media in instruction could be demonstrated effectively. Major content components of the workshop format were interaction analysis, nonverbal classroom communication, microteaching, and simulation." (RIE)

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13. Anderson, Lee F. A Comparison of Simulation Case Studies and Problem Papers in Teaching Decision. Evanston, Ill.: Northwestern University, U.S. Cooperative Research Project, 1964.

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"The basic problem of providing instructions designed to develop specific skills in a meaningful setting, i.e.; a setting which provides many of the cues, demands and characteristics which will be present in actual situations for which those specific skills are required. While the problem itself is not new, or in any way unique to the training situation selected for this project (counselor training), recent technological advancements and theoretical thought surrounding this advancement have provided a relatively unique methodology for attaining solutions to the problem. Directed towards an extension of this technology; simulation as it is now employed in instructional settings designed to increase effective use of cognitive skills. (Twelker)

15. _____. "Film Tests as Predictors of Teaching Behavior." Paper presented at the American Educational Assn. Symposium, Prediction of Teaching Behavior, New York, February 1967. Monmouth: Teaching Research, Oregon State System of Higher Education, 1967.

"A study attempting 'to accurately predict how effectively teachers will behave in classrooms.' The results 'clearly support the hypothesis that as test stimuli become more representative of the behavior to be predicted, and as the opportunity for response approaches the freedom characteristics of life situations, the power of prediction increases.' The extent to

which prediction is possible with the more lifelike tests also is consistently higher than the bulk of the previous studies." (Twelker)

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"Three different approaches to inservice education were described that had been developed to provide individual training in group sessions. Each approach included a carefully planned sequence of learning activities intended to be presented within the organizational context of the person's work. The laboratory approach to the leadership training of instructional staff members presented three illustrative exercises that dealt with evaluating pupils' work, grouping practices, and the use of inbasket items as training materials for principals. A training approach, that was planned to help teachers implement innovations into their classrooms, provides teacher training through simulation of direct experiences with students and by observing and analyzing student classroom work. A discussion of the third approach, the teaching demonstration model, described the development of a formal demonstration into a carefully planned inservice technique. The final chapter listed three major propositions describing the behavior of an organization and presented a way of thinking about the use of inservice programs in organizations that might give guidance to the decisions of those who plan and direct inservice education." (R&D Center)

17. Bishop, Alan J. "Simulating Pedagogical Decision Making." Visual Education, November, 1970. (EJ 031 941)

"This article deals with teacher training methods designed to enable student teachers to practice decision-making." (CIJE)

18. Blough, John A., et al. The Simulation of an Urban School System for Use in Preparing Educational Administrators: Final Report. Columbus, Ohio: University Council for Educational Administration, November 1971. (ED059619)

"The University Council for Educational Administration (UCES) conducted meetings throughout the country during the late sixties and came to the conclusion that both the experience background of professors and the limited number of conceptual and methodological tools available to them stand in the way of providing effective inservice and preservice programs for educational administrators. The project described in this report, arising out of this general problem, was designed to simulate an urban school system and had two general objectives: to develop several sets of instructional materials for immediate use in administrator preparation, and to develop plans that would provide bases for creating additional sets of materials." (RIE)

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"Designed to determine the feasibility of using simulation techniques for introducing home economics education students to student teaching." (Twelker)

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"The simulation technique for preparing prospective home economics teachers uses real-life teaching situations that students create, enact, and analyze. This report concludes that the technique can be used even at a small college with limited resources." (CIJE)

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"Research conducted to determine whether the format of information affects decisions made in the selection of teachers. To make this determination, it was necessary to simulate an educational situation in order to manipulate and control variables. Consequently, the general purposes of the study were: 1) To develop means for simulating a teacher-selection situation in which administrative decisionmaking can be studied. 2) To determine the effects of four variables, all related to information-format, on teacher-selection decisions in relation to the consistency of the decisions, the fineness of the discriminations made, the time needed to make the decisions and the confidence that the administrator has in his decisions. The 4 independent variables manipulated were: 1) amount of instruction provided on how to process information, 2) number of written documents presented, 3) degree of masking of information, and 4) interview information." (Twelker)

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and the nature of the learning/teaching process in education is understood. As proposed, Simu-School would use simulation techniques to recreate the educational planning process. By utilizing a management information system as an educational tool, Simu-School would create a time-compressed simulation of a series of planning problems. Using this simulation technique, educational and community planners could become involved and would experience the results of their decisions within a few days instead of several years." (RIE)

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basic strategy for both the teachers' learning to teach parents and for parents learning to teach their children. Eleven of the 12 parents increased their use of positive reinforcement. Eight of the 12 parents increased the variety of reinforcers used." (RIE)

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"Architects, administrators, teachers, school committeemen, and consultants all participated in designing a new physical plan and a compatible curriculum. This was accomplished without a communications gap among the participants by the employment of a physical model of a proposed school plan. By observing the physical model with movable elements and simulation techniques, planners were able to comprehend more quickly and relate the number of variables present in curriculum change, new course structure, or the design of the building to house instructional programs." (RIE)

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"This state-of-the-art paper summarizes the history of microteaching's development and its rationale, the many uses of microteaching, and the research evidence on microteaching. Although the authors make the distinction between microteaching (a teaching situation scaled down in terms of time, number of students, number and specificity of teaching skills focused on, and offering the opportunity for immediate feedback in some form) and simulation (which uses the same process and the same

teach-critique/reteach-critique cycle, but which, unlike micro-teaching, involves peer-group students, rather than 'real' ones), they recognize that the latter is by far the more common practice in preservice education." (RIE)

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"Presented in this report are the results of the feasibility testing of selected micro-teaching and video recording feedback techniques in a laboratory setting designed to simulate vocational teacher education. It was concluded that all feedback techniques were feasible for field testing, but modifications were recommended in the remote feedback technique. (RIE)

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40. _____. The Longacre School: A Simulated Laboratory for the Study of Teaching. Knoxville: University of Tennessee, College of Education.

"The simulation used to practice solving critical teaching problems which are presented through role playing, film and written incidents." (Twelker)

41. _____. Simulation as an Instructional Alternative in Teacher Education. ATE Research Bulletin No. 8. Washington, D.C.: Assn. of Teacher Educators in Cooperation with ERIC Clearinghouse on Teacher Education, 1971. (ED053067)

"This paper brings together and examines several of the better known developments in the field of simulation as an instructional alternative in teacher education. Six examples of simulation in preservice and inservice teacher education are described, plus discussion of the specific advantages of using simulation in conjunction with student teaching, as part of the college-based teacher education program, and in inservice and graduate education." (RIE)

42. _____. "Simulation: New Direction in Teacher Preparation." Phi Delta Kappan, 48, September 66, 23-24.

"Simulation as it is being tested to meet the criterion of realism as well as to provide a setting wherein trainees or teachers in service may practice a wider range of teaching behavior without fear of censure or failure." (Twelker)

43. _____. "The Use of Simulation in Teacher Education: A Developing Phenomenon." J. Teacher Educ. XX(1), Spring 69, 23-26.

44. Cruickshank, Donald R., and Broadbent, Frank W. "An Investigation to Determine Effects of Simulation Training on Student Teaching Behavior." Educational Technology, 9(10), October 69, 50-54.

45. _____. The Simulation and Analysis of Problems of Beginning Teachers. Brockport: New York State University College, September 1968. (ED024637)
"Examines the training technique of simulation in order to judge its effectiveness in presenting critical teaching problems and determines whether or not exposure to simulated critical teaching problems has any observable effect on the participant's teaching behavior." (Twelker)

46. _____. Simulation in Preparing School Personnel. Washington, D.C.: ERIC Clearinghouse on Teacher Education, February 1970. (ED036470)
"The purpose of this state-of-the-art paper is to provide an overview of simulation, particularly as it relates to the professional preparation of school personnel. The authors summarize simulation-based practice and theory under the following headings: (1) the design and development of instructional simulation in professional education, (2) the uses of instructional simulation, (3) issues to be resolved, (4) advantages and (5) disadvantages of simulation, and (6) questions in need of research." (RIE)

47. Cunningham, Luvern L. "Simulation and the Preparation of Educational Administrators." Paper presented at the International Intervisitation Conference sponsored by the University Council on Educational Administration, University of Michigan, October, 196

48. Davis, O.L., Jr., and Gregory, Thomas B. "Laboratory Components in Teacher Education." Peabody J. Educ., 47(4), January 70, 202-7.

49. Emmer, Edmund T. "Transfer of Instructional Behavior and Performance Acquired in Simulated Teaching." Report Series No. 50. Austin: University of Texas, Research and Development Center for Teacher Education, May, 1970. (ED051136)
"The purpose was to determine whether instructional behavior learned during a series of simulated teaching experiences using peers as students would transfer to a setting in which 'real' pupils were students. Results indicated some behavior change during the period of simulated teaching with peers and provided some evidence that instructional behavior acquired during simulated teaching with peers will transfer. The results suggest that when peers are used as students in simulated teaching, attempts should be made to occasionally use actual pupils in the simulated teaching experience." (RIE)

50. Fattu, Nicholas, and Elam, Stanley, editors. Simulation Models for Education: Fourth Annual Phi Delta Kappa Symposium on Educational Research. Bloomington, Ind.: Phi Delta Kappa, 1965.

"Included in this collection are: (1) An Introduction to Simulation--Fattu, (2) Toward a General Simulation Capability--Michael R. Lackner, (3) A Quick Look at Simscript--Herbert W. Karr, (4) The Acquisition of Experience in a Complex Management Game--William R. Dill and Neil Doppelt, (5) Simulation of Organizational Behavior--Kalman Cohen and Richard M. Cyert, (6) PLATO: An Electronic Teaching Device--Donald L. Bitzer." (Twelker)

51. Finn, James D., and Wedberg, Desmond P. "A Comparative Investigation of the Instructional and Administrative Efficiency of Various Observational Techniques in the Introductory Course in Education." (NDEA-VIIA-685). Los Angeles: California, 1963. (ED003592)

"The effectiveness of simulated and of actual observations of public school classrooms were compared for the introductory course in a sequence of five college courses required in teacher training. A total of 151 students in four sections of the introductory course were randomly assigned to three groups which--(1) observed a minimum of 30 hours in elementary and secondary public school classrooms, (2) observed a minimum of 10 hours in elementary and secondary public school classrooms following 10 hours of on-campus programed observation experiences consisting entirely of sound motion pictures, sound filmstrips, slide and tape presentations, and tape recordings, or (3) observed 10 hours of on-campus programmed observation experiences only. Ten 53-minute periods of photo-sound observation experiences were prepared utilizing 8mm sound motion pictures and 35mm slide-tape programs. The 10-hour on-campus plus 10-hour off-campus technique proved superior to the other techniques in the degree to which stated observation unit objectives were met." (RIE)

52. Flores, Penelope V. "Simulation: An Innovative Approach to Teacher Education Programmes in Teacher Education Institutions." Asian Institute for Teacher Educato.s Newsletter, 6(1), July 71, i-v.

53. Forgan, Harry W. Analysis of the Reactions of 36 Student Teachers to the Simulation Concerning Classroom Management. Kent, Ohio: Kent State University, 1968.

"Field-trial report from Kent State University analyzes student teacher reactions and gives recommendations for revision of the low-cost instructional simulation materials in teacher education under development by Teaching Research." (Twelker)

54. Frymier, Jack R., editor. A Workshop in the Analysis of Teaching: Interaction Analysis, Nonverbal Communication, Microteaching, Simulation. Columbus: Ohio State University, School of Education, December, 1968. (ED031435)
"Articles in this issue represent the substantive content of a series of 25 workshops sponsored by the American Association of Colleges for Teacher Education. The four major articles discuss innovative models based on four approaches for improving teacher performance: (4) 'Simulation' by Donald R. Cruickshank, the University of Tennessee, with the description of each model are the concepts, vocabulary, data, and the instrumental acts necessary for understanding." (RIE)

55. Giammatteo, Michael C. "Process Concerns in Use of Force Field Techniques." Paper presented at a meeting of the supervisors of student teachers held in Portland, Oregon, 1967. Portland, Oregon: Northwest Regional Educational Lab., 1967. (ED030170)
"This paper, one of a series derived from techniques used in training student teachers, explores the process of manipulating the variables in a problem or conflict or challenge situation. The technique calls upon the group to walk through a low level intrapersonal conflict (in a group setting), and to react to interpersonal behaviors in a conflict resolution--to work with the force field concept." (RIE)

56. _____. "Sample of a Gaming Exercise." Paper presented at the Assn. of Secretaries, Vancouver, Washington, March 22, 1969. Portland, Oregon: Northwest Regional Educational Lab., 1969 (ED030169)
"This paper presents a sample game called 'Teacher Preparation', and includes (a) development of an undergraduate college program for teacher candidates that specifies course experiences and contents, (b) restatement of problems into challenges, (c) keeping in mind the reality demons that push ideas into conformity with actuality. Procedures for playing the game are also outlined." (RIE)

57. Gillespie, Judith A. "Analyzing and Evaluating Classroom Games." Social Education, 36(1), January 72, 33-42. (EJ 049 607)
"A model involving (1) identification of objectives; (2) identification of the significant parts of a game; (3) selection and use of evaluation criteria for each part; (4) analysis of the interrelation of the parts. (CIJE)

58. Girod, Gerald R. The Effectiveness and Efficiency of Two Types of Simulation as Functions of Level of Elementary Education Training: Final Report. Pullman: Washington State University, September, 1969. (ED035299)
"An experiment was performed to determine the efficiency of simulation teaching techniques in training elementary education teachers to identify and correct classroom management problems. The two presentation modes compared were film and audiotape. Effects attributable to training level tended to

be nonsignificant measures of effectiveness. A bibliography is included." (RIE)

59. Green, Thad B., and Cotlar, Morton. "A New Dimension in Management Training: A Video-Audio-Participative (VAP) System." Training and Development Journal, 24(10), October 70, 22-27. (EJ 028 052)

60. Gregory, Thomas B., "Teaching for Problem-Solving: A Teaching Laboratory Manual." Report Series No. 32. Austin: University of Texas, Research and Development Center for Teacher Education, January, 1970 (ED046905)

"This manual is one set of tasks developed for use in the microteaching context. These tasks direct candidates' attention to a rather specific system of teaching. This set is concerned with pedagogic tasks in which teachers must engage if they are to teach pupils an approach to problem-solving. The manual is designed for use by teacher candidates to introduce them to some important teaching strategies in the teaching of problem-solving. The manual includes five separate lessons, or tasks, which the student teachers must study and then practice in a live situation of teaching to peers. Each lesson includes a guide for self-evaluation." (R&D Center)

61. Grovom, Dorothy. "Simulated Coordination Experience for Teacher Coordinators." J. Bus. Educ., 44(5), February 69, 197-198.

62. Gwaltney, Thomas M. "Teacher Preparation Through Simulation; Motivation and Research Based on Edusim: Educational Simulation." New Campus, 25, Spring 72, 30-34. (EJ 057 350)

63. Hershey, Gerald L.; Shepard, Loraine V.; and Krumboltz, John D. "Effectiveness of Classroom Observation and Simulated Teaching in an Introductory Educational Psychology Course." Journal of Educational Research, 58(5), January 65, 233-236.

"Compares experimentally two methods of teaching the relationship of psychological knowledge to instructional practices: (1) off-campus trips for public school classroom observations and (2) on-campus simulated teaching experiences. Subjective ratings revealed that students felt that the classroom observation had had more general benefit on their development as teachers, although the simulated teaching experience was rated more helpful in mastering certain teaching skills." (Twelker)

64. Instructional Simulations, Inc. An Introduction to Learning Games and Educational Simulations: A Curriculum Guideline. St. Paul, Minn.: Instructional Simulations, Inc., 1971.

"Based on the research, design efforts and system's approach of Instructional Simulations, Inc., this curriculum guideline is an in-depth treatment of the central ideas of educational simulation and gaming. Designed for the educator interested in system's design and behavior based learning, the

curriculum guideline covers theory, concepts and principles, plus applications. The materials are intended primarily for upper-division and graduate level inquiry." (ISI)

65. Jackson, Alice Stroup. "The Development of Simulation Games for the Education of Special Class Teachers." Unpublished masters thesis, School of Education, University of N. Carolina, Chapel Hill, 1970.

66. Jensen, Ronald L. "The Scheduling Program as a Gaming Device for Administrative Planning." Educ. Technology, 11(5), May 71, 43-45. (EJ 039 305)
"A computer model designed to provide administrators 'faced with the problem of meeting demands from many quarters for the available space' with information about the effects of changes in space availability is described." (CIJE)

67. Johnson, James A., et al. "Videotape Recording in Teacher Education." Educ. Technology, 9(5), May 69, 48-53.

68. Kersh, Bert Y. Classroom Simulation--A New Dimension in Teacher Education. Monmouth: Teaching Research Division; Oregon State System of Higher Education, June 30, 1963. (ED003613)
"The objectives of this study were to develop a program of classroom simulation for the preservice education of elementary school teachers and to conduct a test of that program. A single sixth-grade classroom was simulated through the use of films and printed materials. Four methods were used to present the sequences--(1) large motion pictures, the most realistic, (2) small motion pictures, intermediate, (3) large stills, intermediate, and (4) small stills, least realistic. Analysis of variance in the post-test scores revealed a significant difference in favor of the small stills, the least realistic. All other differences were insignificant." (RIE)

69. _____. Classroom Simulation: Further Studies on the Dimensions of Realism: Final Report. Monmouth: Teaching Research Division, Oregon State System of Higher Education, 1965.
"This study adds further support to the suggestion that classroom simulation may be adapted to individualized or group-paced instruction where the projections are smaller than life-size and responses are described." (Twelker)

70. _____. "The Classroom Simulator: An Audiovisual Environment for Practice Teaching." Audiovisual Instruction, 6(9), 1961, 447-448.
"A description of the facility called the Classroom Simulator, which was built to allow techniques to be developed for simulating a variety of classroom situations to which student teachers could react." (Twelker)

71. _____. College Planning Exercise for Innovative Instructional Problems. Monmouth: Teaching Research Division, Oregon State System of Higher Education, 1966.
"A workshop activity organized on the Oregon College of Education campus. It was desired that a large segment of faculty, students and administrative personnel be present so that the problems that were to be dealt with would be viewed from more than one perspective." (Twelker)

72. _____. "Fidelity in Classroom Simulation: The Effect of Variations in the Visual Display on Learning Date and Laboratory Performance Ratings." Paper presented at the American Educational Research Assn. Convention, Chicago, February, 1964. Monmouth: Teaching Research Division, Oregon State System of Higher Education.
"Discusses classroom simulation as a technique for training teachers. Teacher educators are looking upon simulation as a promising new instructional medium, one which may resolve some pressing problems arising out of their efforts to provide laboratory experiences for beginning teachers. The simulation materials described are named Mr. Land's Sixth Grade and are designed for individualized instruction. Student teachers come to a special laboratory facility for individual instruction under the supervision of an experienced teacher and actually interact with the children on a film for a total of 5 to 10 hours of instruction." (Twelker)

73. _____. "Simulation: Implications for Professional Laboratory Experience." Paper presented at the Assoc. for Student Teaching Conference, Chicago, February, 1964. Monmouth: Teaching Research Division, Oregon State System of Higher Education.
"The importance at all levels of simulation materials as instructional tools." (Twelker)

74. _____. "Simulation in Teacher Education." Paper read as part of the Symposium, "Programmed Learning and Teacher Education," at the Annual Convention of the American Psychological Assn., St. Louis, Missouri, 1962. Monmouth: Teaching Research Division, Oregon State System of Higher Education, 1962.
"Concerns a particular problem in teacher education: the development of specific skills in classroom instruction, involving one application of the simulation technique discussed in this paper. The technique of classroom simulation and how the simulation materials will be used in the classroom simulator." (Twelker)

75. _____. "Simulation with Controlled Feedback: A Technique for Teaching with the New Media." Paper presented at the meeting of the American Educational Research Assn., Atlantic City, New Jersey, February 20, 1962. Monmouth: Teaching Research Division, Oregon State System of Higher Education.
"Description of a simulation technique and facility for research in teaching and learning." (Twelker)

76. Kidder, Steven J., and Guthrie, John T. "Training Effects of a Behavior Modification Game." Simulation and Games, 3(1), March 72, 17-28. (EJ 056 874)

77. King, Arthur Dean. An Application of Simulation Techniques to an Innovative Teacher Training Program. Tallahassee: Florida State University, Computer-Assisted Instruction Center, November, 1970. (ED046251)

"The purposes of this investigation were to analyze a teaching training program in order to construct models that represent the instructional process and to develop procedures for implementing the models on a computer system. The training program which provided the framework for these research goals was labeled a 'behavioral simulation,' since it utilized the trainee's behavior as the most significant system component. The model that represented the behavioral simulation was implemented on a computer, and these procedures were labeled a 'system simulation.' The function of the behavioral simulation was to train prospective teachers by providing an environment which facilitated transfer to the classroom. The function of the system simulation was to generate and test propositions concerning this new training system by translating ideas into the system and by testing the implications of the ideas or strategies. Within the behavioral simulation the level of the trainees' average task performance suggested that the complex skills involved in teaching can be organized in ordered sequences of complementary skills. Appendices contain supporting materials. A bibliography is given." (RIE)

78. Klietsch, Ronald G. An Introduction to Learning Games and Instructional Simulations. St. Paul, Minn.: Instructional Simulations, Inc., 1969.

79. Lehman, David L. Role Playing and Teacher Education: A Manual for Developing Innovative Teachers. Washington, D.C.: Commission on Undergraduate Education in the Biological Sciences, February, 1970. (ED052060)

"The rationale and procedures for using role-playing in teacher education to provide teachers with practice in solving various classroom problems are illustrated by descriptions of 17 simulated situations based on secondary school biology classes. Techniques of implementing role-playing as a teacher training technique are suggested for inservice and preservice education, with specific dangers and advantages noted." (RIE)

80. _____. "Simulation in Science--A Preliminary Report on the Use and Evaluation of Role Playing in the Preparation of Secondary School Student Teachers of Science." Paper presented at the American Assn. for the Advancement of Science meeting, Washington, D.C., December, 1966.

"Lehman's 'Simulation in Science' is a structured form of peer teaching. In many ways this method is similar to microteaching, but is truly a human-ascendant role simulation using a background model, while microteaching is considered scaled-down teaching." (Cruickshank)

81. Lowry, William C. "Some Innovations in the Preparation of Teachers." Music Educ. J., 55(5), January 69, 28-31.

82. Lundquist, Gerald, and Blackham, Garth J. "Simulation and Group Counseling in the Training of Prospective Teachers." J. Stud. Personnel Assn. Teacher Education, 8(3), Spring 70, 85-89.
"Results suggest that the experimental treatment can influence changes in the meaning prospective teachers have for the concepts 'public school teacher', 'parents', and 'parent teacher conference'. Results might be enhanced if the counselor assumed a more active role as coach or diagnostician. (CIJE)

83. McCormick, Jim. "Simulation and Gaming as a Teaching Method." Programmed Learning and Educational Technology, 9(4), July 72, 198-205.
"The application of simulation as a teaching method in secondary education, teacher training and at university level is outlined. A definition of simulation is discussed and the construction, application and evaluation of simulation described." (Editors)

84. McGuire, Christine H., and Babbott, David. "Simulation Techniques in the Measurement of Problem-Solving Skills." Journal of Educational Measurement, 4(1), Spring 67, 1-10.
"This source deals with the techniques, scoring, reliability, estimation and validity assessment of simulated clinical problems." (Twelker)

85. McQuigg, R. Bruce. "Simulation--Focus on Decision Making in Secondary Education." Viewpoints, 46(1), January 70, 49-183. (EJ 029 181)
"Description of a program in which simulated experiences as student teachers and beginning teachers enable the participants to face the actual problems of a classroom teacher. Appendixes give program outlines and materials used." (CIJE)

86. Marten, Milton; Dunfee, Maxine; Buffie, Edward; and McQuigg, Bruce. "Simulation--Focus on Decision Making." Viewpoints, 46(1), January 70, 1-48, 115-173. (EJ 029 180)
"A detailed description of Project INSITE, designed to provide an accelerated, enriched, and innovative teacher education program. Appendixes give program outlines and materials used." (CIJE)

87. Massachusetts University. A Feasibility Study on the Model Elementary Teacher Education Program, Phase II: Vol. II. Final Report. Amherst: Massachusetts University, January, 1970. (ED043583)

"The second volume of the study contains the sections on management feasibility and economic feasibility, which comprise more than two-thirds of the document, and sections on simulation modeling, client acceptability, inservice design, evaluation, and maintaining relevance of the model for teacher education in the 70's. The section on simulation gives a brief description of the simulation models used and their respective functions." (RIE)

88. Miller, G.W. "An Attempt to Determine Certain Effects of Laboratory Classroom Simulation Training on Selected Dimensions of Teacher Behavior." Unpublished doctoral dissertation, University of Oregon, 1967.

"Investigates effects of classroom simulation using the Teaching Research materials on classroom management behavior." (Twelker)

89. Mitchell, P. David. "A Simulated Classroom and Educational Game." Paper prepared for presentation to the International Congress of Cybernetics and Systems. Advances in Cybernetics and Systems. Edited by H. Rose. London: Gordon and Breach Ltd., (in press).

90. _____. "A Simulated Classroom to Study Pre-Instructional Decisions." Paper presented to the Eleventh Annual Symposium of the National Gaming Council, Baltimore, Maryland, October 5, 1972. Montreal 107, Quebec, Canada: Sir George Williams University, Department of Education.

91. _____. "Simulating an Instructional System for an Educational Game." Proceedings of the Canadian Symposium on Instructional Technology. Edited by J. Akeroyd. Ottawa, Ontario, Canada: National Research Council, 1972.

92. Mitchell, P. David, and Taschereau, S. "Developing a Simulated Classroom: A New Approach for Teacher Training." Paper presented to 1972 Joint Annual Conference of the Canadian Education Associations, June 1972.

93. Moe, Alden J., and Feehan, Sister Mary Dorothy. "The Use of Videotape Recorders in the Education of Reading Teachers." Int. Reading Assn. Conf. Proc., Pt. 1, 13, April 68, 460-62.

94. Ober, Richard L. "Multidimensionality as a Means for Placing Teaching Practice and Personal Beliefs into Closer Agreement." Paper presented at the Annual Meeting of AERA, Minneapolis, Minn., March, 1970. (ED041826)

"Far too many teacher training programs fail to prepare teachers properly to translate theory and beliefs concerning teaching effectiveness into practice at the classroom level. To improve this situation, professors of education need to be innovative. The practice called multidimensionality uses several systems simultaneously to view the same classroom situation and shows promise of being more effective than the use of a single system. Programs incorporating the multidimensional-systematic observational approach by their very nature tend to be more laboratory-oriented than lecture-oriented. The student is frequently involved in data collection activities both under simulated and actual conditions." (RIE)

95. Pincus, Margaret E., editor. Some Essays on Computers in Education. Cambridge, Mass.: Harvard University, Graduate School of Education, 1967. (ED026859)

"Students at the Harvard Graduate School of Education prepared papers exploring the scope of computer use in education. While computers are not yet capable of wholly replacing teachers, they are capable of a higher level of complex behavior than is generally realized. The simulation technique can also aid in training school and educational administrators. Curricula can use computer-generated visual aids." (RIE)

96. Popham. W. James. The Influence of Highly Specific Instructional Video Tapes on Certain Cognitive and Affective Behaviors of Teachers. Los Angeles: California University, March, 1966. (ED012714)

"To test the effect of video taped simulated instructional sequences on the modification of teachers' professional knowledge and attitudes. With respect to the video tape post-test, significant differences were found among the three groups on all four topics (the no-instruction control group scoring lowest, and the video tape group highest), but, on the other measures, the use of the video tape program yielded no significant differences. Further research is necessary to learn whether the obtained differences are reflected in actual teaching performance." (RIE)

97. Prentice, William C.H. "Simulating the Financial Future of a Four-Year College." Journal of Educational Data Processing, 9(1-2), 1972, 18-29. (EJ 057 526)

98. Ramey, J.W. "Using Video Tape Simulation to Make a Workshop Work." Phi Delta Kappan, 49, 1968, 525-7.

99. Rice, A.H. "Simulation is the Big Word in Administrative Training." Nation's Schools, June 1964, 10.

100. Ryan, T.A. "Use of Simulation to Increase Transfer." School Review, 76, June 1968, 246-252.
"A series of simulated situation problem-solving tasks provided students practice in using knowledge they gained to solve real-life problems." (Twelker)

101. _____. "Using Simulated Situation Problem Solving Tasks to Increase Ability to Apply Principles in Realistic Settings." Paper read at AERA Convention, Chicago, February, 1965. Corvallis: Oregon State University.
"Results indicate that Ss who have a choice of method for acquiring information combined with practice in simulated problem solving requiring immediate use of acquired information do best, while students with no choice and no practice with simulated problem-solving tasks do poorest on a test of ability to use principles in realistic situations. Concludes that practice in problem solving under realistic conditions should be given and situations created in which students can apply knowledge they have acquired." (Twelker)

102. Sage, Daniel D. The Development of Simulation Materials for Research and Training in Administration of Special Education: Final Report. (USOE Project #6-2466). Washington, D.C.: U.S. Office of Education, Bureau of Education for Handicapped, 1967.
"A project for the development and production of materials for use in research and training in the field of administration of special education." (Twelker)

103. Salomon, Gavriel. "A Suggested Procedure for Training Teachers for Subjective Response Uncertainty Based on a Laboratory Application." J. Teacher Educ., 21(2), Summer 70, 244-250.

104. Sarthory, Joseph A., and Wade, Durlyn E. "Simulating the Acquisition and Allocation of Educational Resources." Educational Technology, 11(12), December 71, 58-61. (EJ 049 833)

105. Schmuck, Richard, and Runkel, Philip. Organizational Training for a School Faculty. Eugene: CASEA Publications, University of Oregon, 1970.
"The purpose of this study was to determine whether the effectiveness of problem-solving by the staff of a junior high school could be increased by direct training in communication and group problem-solving. Results of the project included a stronger decision-making role by teachers and improved staff relations." (CASEA Publications)

106. Sheepmaker, B., and Zinn, Karl L., editors. "World Conference on Computer Education--1970." Papers presented at the World Conference on Computer Education, First, Amsterdam, The Netherlands, August 24-28, 1970. Geneva, Switzerland: International Federation for Information Processing, 1970. (ED053555)

"Nearly 150 papers are included in this volume which surveys (1) the state of the art of computer education, (2) education about computers, including teacher training, and (3) the practice of computer based learning, computer languages, simulation, and strategies for development and presentation of computer based learning exercises." (RIE)

107. Shulman, Lee S., et al. Studies of the Inquiry Process: Inquiry Patterns of Students in Teacher-Training Programs. Final Report. East Lansing: Michigan State University, College of Education, July 1968. (ED028157)
"A model of the inquiry process based on John Dewey's concept of inquiry was used to develop a means of observing and scoring individual inquiry behavior. The teacher's in-basket, a simulation of problems crossing a teacher's desk in a simulated school setting, was developed for the study. Appended are a 51-item bibliography--inbasket materials." (RIE)

108. "Simulations in Education and Training." Educational Technology, IX(10), October 69, 43-70.
"This issue of Educational Technology includes a section entitled 'Simulation in Education and Training.' The articles in this section are about various aspects of simulations including computer simulations, designing simulations, and the effects of simulation training on student teaching behavior. These articles should be of use to those interested in the current work being done in the field of educational simulations."

109. Slahor, Stephanie. "Decision-Making Experience in Administration." School Management, 16(5) May 72, 30-31. (EJ 057 287)
"Videotaped simulations provide administration students with something more than the usual textbook case histories." (CIJE)

110. Stewart, Lorne D. "Teacher Training in the Schools." Reading Improvement, 8(2), February 71, 59-61. (EJ 044 014)

111. Swan, Howard A., and Johnson, Jim. Simulation Exercises. Dekalb, Ill.: Creative Educational Materials, 1968.

112. Tansey, P.J. "Simulation Exercise." Reading, England: Berkshire College of Education, 1968. (Mimeographed.)

113. _____. "Simulation Techniques in the Training of Teachers." Simulation and Games, 1(3), Sept. 70, 281-303.

114. Tansey, P.J., editor. Some Aspects of Simulation in Education. Maidenhead, Berkshire, England: McGraw-Hill, 1971.
"This reference book covers a number of aspects of simulation and gaming as they relate to education." (Twelker)

115. Tansey, P.J., and Unwin, Derick J. Simulation and Gaming in Education. New York: Barnes and Noble, Inc., 1969.
"This text represents the first United Kingdom commercial publication to summarize and explore in some depth all of the various educational techniques that are commonly thought of as instructional simulation or gaming. The book which is aimed primarily at the teacher and the teacher educator examines (1) the historical development of simulation and gaming, (2) its advantages, (3) models and varieties of simulation (simulation games, non-simulation games, and non-game simulation exercises), (4) simulation in teacher education, and (5) computers and simulation. It is informative for the novice as it pulls many diverse elements into one place." (Twelker)

116. _____. Simulation and Gaming in Education, Training and Business. Coleraine, N. Ireland: New University of Ulster, Education Centre, 1969.

117. Teaching Research. Low-Cost Instructional Simulation Materials for Teacher Education Establishing Teaching Principles in the Area of Classroom Management. Monmouth: Teaching Research Division, Oregon State System of Higher Education, 1968.

118. Temp, George. Simulation and Teacher Education. Los Angeles: University of California, Teacher Education Project, September, 1962.
"Implementation of simulation in instruction in educational psychology courses at UCLA, the interest being initiated by Dr. Bert Kersh of Teaching Research, Oregon State System of Higher Education." (Twelker)

119. Twelker, Paul A. "Classroom Simulation and Teacher Preparation." The School Review, 75(2), 1967, 197-204.
"The application of the classroom simulation technique to the problems of teacher preparation. Includes a description of a specific classroom simulation technique." (Twelker)

120. _____. Designing Simulation Systems. Monmouth: Teaching Research Division, Oregon State System of Higher Education, 1969.
"Outlines the approach of designing instructional simulation systems developed at Teaching Research. The 13 phases of simulation design are summarized, and an effort is made to expose the vital decision points that confront the designer as he develops simulation experiences." (Twelker)

121. _____. Interaction Analysis and Classroom Simulation as Adjunct Instruction in Teacher Education. Monmouth: Teaching Research Division, Oregon State System of Higher Education, February, 1968. (ED021780)

"Examines two adjunct instructional programs for teacher education: classroom simulation training and interaction analysis training. Examines: 1) What are the effects of training college students with the two techniques in terms of teaching performance, course grades and attitudes toward teaching? 2) What are the interactive effects of interaction analysis training on the classroom simulation training? 3) Are there interactions between learner characteristics and training program?" (Twelker)

122. _____. "Simulation Applications in Teacher Education." Paper presented at the American Educational Research Assn., Chicago, February, 1966. Monmouth: Teaching Research Division, Oregon State System of Higher Education. (ED025460)

"In 1961, Teaching Research Division of Oregon State System of Higher Education began developing a variety of simulated classroom situations through the medium of sound motion pictures and printed materials. Initial evidence indicates that there is transfer of learning from simulated to real experience, but much remains to be learned about how simulation best works." (RIE)

123. Twelker, Paul A., editor. Instructional Simulation: A Research Development and Dissemination Activity. Monmouth: Teaching Research Division, Oregon State System of Higher Education, February, 1969. (ED032657)

"Includes the following chapters: Simulation: An Overview (Twelker); The Design of Instructional Simulation Systems (Jack Crawford and Twelker); Instructional Simulation: Past, Present and Future (Twelker); Simulation in Vocational Education (Dale G. Hamreus); and Situational Response Testing: An Application of Simulation Principles to Measurement (H. Del Schalock)." (Twelker)

124. Twelker, Paul A., and Layden, Ken. Educational Simulation/Gaming. Stanford, Calif.: Stanford University, ERIC Clearinghouse on Media and Technology, August, 1972.

"This paper briefly compares simulation, gaming, and educational simulation/gaming. Includes bibliographies of reference sources, lists of nationally recognized centers of activity in simulation/gaming, and addresses of contact persons." (CIJE)

125. Twelker, Paul A., et al. Successive vs. Simultaneous Attainment of Instructional Objectives in Classroom Simulation. Monmouth: Teaching Research Division, Oregon State System of Higher Education, December, 1968. (ED026304)

"An experiment was conducted to determine which of three modes of instruction controlling the 'density' of simulation training was most effective in terms of transfer and most efficient in terms of the learning rate of preservice teachers. The conclusion after analyses of variance was that the simultaneous method was more efficient." (RIE)

126. University Council for Educational Administration. The Instructional Uses of Simulation in the Preparation of School Administrators. Columbus, Ohio: University Council for Educational Administration, 1962.

127. ____. Simulation in Administrative Training. Columbus, Ohio: University Council for Educational Administration, 1969.

128. Utsey, Jordan. Simulation in Reading. Eugene, Oregon: University of Oregon, December, 1966. (ED013703)
"An attempt to improve the reliability, validity, and efficiency of all reading instruction by modifying certain dimensions of teacher behavior is reported. Materials were developed to give prospective teachers an opportunity to learn the marking code of the informal reading inventory, to practice, and to evaluate their skill. A series of simulated instructional films and printed materials was devised. The results indicated 94% accuracy." (RIE)

129. Utsey, Jordan; Wallen, Carl; and Beldin, H.O. "Simulation: A Breakthrough in the Education of Reading Teachers." Phi Delta Kappan, 47, June 66, 572-574.
"Procedure for using the Informal Reading Inventory Instructional Process materials (films and printed matter) to train teachers in the use of the Informal Reading Inventory to assess a child's reading level. Preliminary test results indicate that this method allows students to assess reading levels with more accuracy than teachers with an average of 11.6 years experience (92% vs. 70% respectively). Carryover had not been completely evaluated but preliminary results indicate positive results." (Twelker)

130. Vicek, Charles W. Assessing the Effect and Transfer Value of a Classroom Simulator Technique. East Lansing: Michigan State University, College of Education, 1965. (ED003635)
"Investigations were conducted on (1) the effect of a classroom simulator in providing teacher-trainees with experience in identifying and coping with classroom problems prior to their student teaching experience, (2) the transfer value of the classroom simulator experience, and (3) the effect of the simulator in teacher-trainee self-confidence. In addition, the study measured teacher-trainee attitudes toward their classroom simulator experience. Concluding statements indicated that (1) effective responses to classroom problems can be developed through classroom simulator experiences prior to teaching assignments, (2) awareness of classroom problems is apparently possessed by teacher trainees prior to classroom simulator experience, (3) principles which can be used in solving classroom problems can be developed through classroom simulator experiences, (4) experience gained in responding to problems within the classroom simulator do

not transfer to the teacher-trainees' student teaching experience, (5) principles developed for application in solving classroom problems do transfer to the teacher trainee's student teaching experience, and (6) teacher-trainees' confidence in ability to teach is increased through classroom simulator experience." (RIE)

131. _____. "Classroom Simulation in Teacher Education." Audiovisual Instruction, 11(2), 1966, 86-90.
"A classroom simulator was used to test the effectiveness of a simulation technique as compared to conventional instruction. Posttests for both groups were new simulation materials. Trained observers found no significant difference between the experienced and control groups in terms of awareness of problems or in effectiveness in responding to the problems. There were significant differences in the application of principles used in solving problems. Low reliability between raters and limited return of observation data limit the significance of the findings." (Twelker)

132. Weber, Wilford A. A Study of the Feasibility of the Refined Syracuse University Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers: Final Report. New York: Syracuse University, School of Education, December, 1969. (ED042723)
"This study examined the financial human, material, and organizational feasibility of developing and operating the Syracuse Model Elementary Teacher Education Program. A major emphasis is on the detailing of costs associated with implementation of the program. Additional outputs from the study include a refinement of the model, descriptions of strategies dealing with various aspects of program implementation. . .a simulation package (described, but not included in this report) which allows potential adopters to face the problems of implementation." (RIE)

133. Weinberger, Morris J. "The Use of Simulation in the Teaching of School Administrators." Unpublished doctoral dissertation, Teachers College, Columbia University, New York, 1965.

134. Wynn, R. "Simulation: Terrible Reality in the Preparation of School Administrators." Phi Delta Kappan, XLVI, December 64, 170-173.

JOURNALS AND NEWSLETTERS

135. ISI Learning Letter. Instructional Simulations, Inc., 2147 University Ave., St. Paul, Minn. Ronald G. Klietsch, Editor. Five issues per year, $1 per year.
"Includes items of special interest to classroom teachers and simulation games users." (Twelker)

136. Instructional Simulation Newsletter. Simulation Systems Program, Teaching Research Division, Oregon State System of Higher Education, Monmouth, Ore. Paul A. Twelker, Editor. Published three times a year on an irregular basis, free.
"Reports activities of the Simulation Systems Program (including reports and products available) and other articles of interest to instructors, researchers, and developers." (Twelker)

137. Occasional Newsletter About Uses of Simulations and Games for Education and Training. Project SIMILE, Western Behavioral Sciences Institute, 1150 Silverado Road, La Jolla, Calif. Compiled by the project staff. Published three times a year on an irregular basis, $5 per year.
"Reports reviews of commercial games as well as activities by individuals in the field. A comprehensive, informative, and valuable document for the classroom teacher as well as the sophisticated gamer." (Twelker)

138. Simulation. Simulation Councils, Inc., P.O. Box 8248, San Diego, Calif. John McLeod, Editor, Monthly, $28 annually.
"Reports on the use of computers and similar devices employing mathematical or physical analogies. Includes a calendar of events of computer-related groups, a section on computers in education, articles, simulation surveys and literature reviews." (Twelker)

139. Simulation and Games: An International Journal of Theory, Design, and Research. Sage Publications, Inc., 275 S. Beverly Drive, Beverly Hills, Calif. Michael Inbar, Editor, Quarterly, $15 annually and professional discounts are available.
"Simulation and Games is intended to provide a forum for theoretical and empirical papers related to man, man-machine, and machine simulations of social processes. The journal publishes theoretical papers about simulations in research and teaching, empirical studies, and technical papers about new gaming techniques. Each issue includes book reviews, listings of newly available simulations, and 'simulation reviews'." (Twelker)

140. Simulation/Gaming/News. Stanford University, Box 8899, Stanford, Calif. Paul Twelker, Editor. Five issues per year (every other month except in the summer), $4 per year.
"This tabloid style, informal publication provides readers with practical 'applicable' information in addition to more theoretical considerations. It treats the application of simulation and gaming on most areas of experience and at different educational levels." (ERIC Paper, Aug. 1972)

SIMULATIONS AND GAMES

141. Abt Associates Inc. EDPLAN. Cambridge, Mass.: Abt Associates, Inc., 1970.
"EDPLAN is a role-play simulation for 29-36 people which demonstrates the major issues of contemporary education planning, while encouraging awareness of alternative programs, costs, and benefits. Concepts presented include: taxation; bond issues; school board elections; alternative new teaching strategies, content, equipment, and facilities. Differing points of view among teachers, administrators, elected officials, students, and tax-paying parents are included." (Games Central)

142. _____. Fixit. Chicago: Department of Educational Services, Science Research Associates.
"A simple game designed to focus attention on the problem of deciding whether to introduce games and simulations into any school system." (Twelker)

143. _____. Sepex: A School Electronics Planning Exercise. Cambridge Mass.: Abt Associates, Inc., 1967.
"Designed to involve educational decisionmakers in the process of planning applications of electronic systems to instructional and administrative educational services. Employs innovative simulation and role playing techniques to motivate and create understanding of the feasibility, potential educational benefits and costs of alternative electronic systems for interconnecting school districts in large geographic areas of low population density." (Twelker)

144. Bolten, Dale L. Selection of Teachers. Columbus, Ohio: University Council for Educational Administration, 1970.
"The objective of this game is to learn how to process information about a number of applicants and to make consistent decisions regarding the selection of an applicant for a position." (Zuckerman & Horn)

145. Buffie, Edward G. Human Relations: One Dimension of Teaching. Bloomington: Indiana University, School of Education, Center for Innovation in Teacher Education, available Spring 1973.

"This simulation package consists of films, film excerpts, audio-tapes, slides, Instructor's Guide, and a Student' Kit. The package includes materials of two major types. The first cluster of materials, a slide-tape set plus printed matter, provides the broad context (general community) in which Rose Brady, a neophyte teacher, begins her professional career. Background materials relating to the Thompson Elementary School, an inner-city school (100 years old) are also provided. Not only is information provided about the school per se but the sub-community it serves as well. Another cluster of materials relate to critical incidents and/or episodes involving Rose Brady, encounters which require decisions on her part. Since the main focus of these materials is upon the human relations dimension of teaching, the encounters involve teacher-pupil relationships, teacher-parent relationships, teacher-administrator relationships, etc." (Author)

146. Center for the Advanced Study of Educational Administration. ERNSTSPIEL. Eugene: University of Oregon. Expected availability--Winter 1972-73.

"A problem-solving kit which utilizes games, puzzles and riddles. It is a self-instructional package designed to enhance the ability of school administrators and their staffs to solve problems and make decisions as groups through improved communication. The kit was conceived specifically to help school administrators prepare their staffs for the predicted transition from the traditional self-contained classroom to the classroom of the future involving team teaching and/or multiunit structure." (CASEA)

147. Cruickshank, Donald R.; Broadbent, Frank; and Bubb, Roy. Inner-City Simulation Laboratory. Chicago, Illinois: Science Research Associates, Inc., 1971.

"Simulation techniques help prepare students and teachers for the realities of the inner-city classroom. Participants assume role of Pat Taylor, teacher in a typical sixth-grade inner-city classroom. Incidents presented through films that view the situation from teacher's subjective eyes and through role play, in-basket memos, playlets, and course and committee assignments. Thirty-four incidents considered most frequent and severe by inner-city teachers. Participants apply theories and examine practice. Components include Director's Unit: 2 filmstrips and accompanying record, fourteen 16mm films, spirit masters, 36 role-play cards, a Director's Guide, and a Participant's Unit. Participant's Unit: Cumulative Record Folders for each student and 288-page Data Book." (SRA)

148. _____. Teaching Problems Laboratory. Chicago, Illinois: Science Research Associates, Inc., 1969.
"Simulation materials create a fictitious but lifelike elementary classroom where teachers and student teachers can practice decision making without restraints of actual teaching situation. Filmstrips, films, teacher's handbook, cumulative records, and other materials help simulate a fifth-grade classroom in the town of Madison, U.S.A. Thirty-one critical teaching incidents, considered the most troublesome problems for first-year teachers, are included. Participants become aware of the many considerations necessary to make a decision, the unique problems that face teachers, and the wide-ranging effect their decisions can have. Components include Institutional Unit: 11 color-and-sound films, 2 filmstrips and a long-playing record, a set of role-play cards, a Simulation Director's Guide, spirit masters, and a sample Participant's Unit. Participant's Unit: Cumulative Record Folders, Faculty Handbook, Curriculum Handbook, Audiovisual Catalog, Reading Progress Report, Sociograms, and Participant's Response Book." (SRA)

149. Dodge, Dorothy. Simulation as an Educational Tool. Minneapolis, Minn.: Association for Productive Teaching, 1971.
"Six audiotapes and a Leader's Guide, plus 2 simulation models 'Crisis' and 'Sitte', constitute a thoroughgoing introduction to simulation as an educational tool. Package designed for use in teacher education; the simulation models, however, are well suited for use in college and secondary social studies classes." (Association for Productive Teaching)

150. Education Turnkey Systems, Inc. The COST-ED Model: A New Economic Tool for the School Administrator. Washington, D.C.: Education Turnkey Systems, Inc., September, 1971. (ED057462)
"This model is a computerized mathematical simulation of the manner in which educational decisions and patterns of school operation affect costs. The design shows how teacher salaries, school building design parameters, and decisions regarding class size and instructional materials expenditures contribute to total school costs. The sophisticated economic analysis provided by the COST-ED model is especially useful in program evaluations, program budgeting, and program simulations. Appendixes present sample computer reports and a glossary of terms." (RIE)

151. Forbes, John, and Willey, Darrel. The School Personnel Management Game. University Park, New Mexico: The Academic Planning Tool Center, 1963.

152. Leadership Training Institute for School Personnel Utilization. Inservice Training Design Simulation. Amherst: Massachusetts University, School of Education, 1970. (ED051091)
"This exercise simulates the process of planning for inservice training. The simulation requires that a planning group of 10 members formulates a plan for the 65 staff members of an elementary school, given the constraints of an inservice training budget, a school calendar, and a limited amount of consultant help. The four phases of the exercise are planning, evaluation and analysis, plan modification, and reports and analysis." (RIE)

153. _____. Instructional Planning Simulation. Amherst: Massachusetts University, School of Education, 1970. (ED051092)
"This exercise simulates the planning of an instructional program for the second week of the sixth grade in an elementary school. The goal is to influence the planning so that the personal talents and interests of each member of the six person staff team will be best used in the planned activities. All the material used in the simulation, with the exception of the handbook, is included in the document." (RIE)

154. _____. School Communications Game. Amherst: Massachusetts University, School of Education, 1970. (ED051090)
"This exercise explores by means of simulation the effect which the communications that take place in a school have on organization climate. The 8 staff roles involved are assistant superintendent, principal, English department head, social studies department head, science department head, English teacher, social studies teacher, and science teacher. The objective for each one is to use the available modes of communication to achieve a personal goal which is indicated in the role description." (RIE)

155. _____. The School Planning Game. Description and Rules. Amherst: Massachusetts University, School of Education, 1970. (ED051093)
"This exercise simulates the planning of a differentiated staffing prospectus for a high school. The objectives are (1) to develop a program of differentiated staffing based on educational needs, (2) to identify critical organizational variables, (3) to experience the difficulties of group decision making, and (4) to develop a training strategy. The material required for the simulation is included in the document." (RIE)

156. Semmel, Melvyn. Anticipation Games. Bloomington: Indiana University, Center for Innovation in Teaching the Handicapped, Instructional Development Laboratory.

Includes games True Grid, Twenty-Five, Over Easy, and many variations. "Anticipation in this context is a theoretical construct involving the ability to make accurate predictions of a learner's behavior in a given situation." (Author)

157. Smith, Carl B., and Farr, Roger. Evaluation Training: Simulation Exercises. Bloomington: Indiana University, Measurement and Evaluation Center in Reading Education, 1971 (ED054917)

"The preparation of this simulation material package is guided by the concept of an evaluator as a decision-maker, based on the definition of evaluation as a continuous assessment concerned with answering decision-making questions. The continuous concept of evaluation is based on the model created by Egon Guba and Daniel Stufflebeam, named by its acronym CIPP--context, input, process, and product evaluation. Sections are devoted to describe and explain the CIPP evaluation model. The intent of this evaluation game is to provide an instructional tool for applying the concept of continuous evaluation to a reading program. Its specific goal is to teach the participant to use one evaluation model as a guide to knowing what to do and what to decide. The materials describe a school system that hires an evaluator who must help conceive a reading program as well as assess it. The incidents described try to simulate actual school situations. There are 3 kinds of pages in this simulation game, each marked by a different color: white pages carry descriptions of situations, green pages are response sheets, and pink pages carry the 'omniscient comments' or answers proposed by the Authors." (RIE)

158. Thiagarajan, Sivasailam. The GAMEgame. Bloomington: Indiana University, Center for Innovation in Teaching the Handicapped, Instructional Development Laboratory, 1972.

"GAMEgame is a simulation game on designing, developing, evaluating, modifying and using learning games. Specifically, it helps the players achieve the following objectives:--to design a learning game given specifications about the instructional task and the target students--to test a learning game and to modify it on the basis of student feedback.--to evaluate a learning game in terms of cost effectiveness.--to modify a learning game to suit local needs and conditions.--to use a learning game effectively in the classroom. GAMEgame is designed for inservice and preservice teacher training. . ." (Author)

159. _____. Naked Monsters. Bloomington: Indiana University, Center for Innovation in Teaching the Handicapped, Instructional Development Lab.

"The purpose of the monster games is to introduce the players to systematic skills in concept teaching and to give them opportunities to use these skills as game strategy." (Author)

160. Twelker, Paul A. Development of Low Cost Instructional Simulation Materials for Teacher Education. Monmouth: Teaching Research Division, Oregon State System of Higher Education, July, 1970. (ED045553)

"Two sets of low-cost instructional simulation materials for use in teacher education programs were developed, one dealing with problems of classroom management and one dealing with discovery teaching. An effort was made to expose students to certain principles of classroom management or discovery teaching before they used the simulation materials. Data obtained from the evaluation revealed that the classroom management series left little to be desired in timeliness and credibility. Design-wise, improvements were indicated that would be expected to have a significant positive effect on strength, robustness, reliability, and affect created by the system. Changes made during the course of the project did not permit field testing of the discovery teaching series. (An appendix, which constitutes about 3/4 of the report, contains the student and instructor manuals for the two series, a field trial evaluation guide, comments on the classroom management series from subject matter experts, media specialists, and students, and the implementation analyses made by three schools of education involved in testing materials.)" (RIE)

161. Venditti, Frederick. The Changing High School: A Simulation Game for Teachers in the Predominantly Black School at Needham. New York, N.Y.: Anti-defamation League, B'nai B'rith, 1972.

162. _____. Solving Multi-ethnic Problems: Lakemont for the High School. New York, N.Y.: Anti-defamation League, B'nai B'rith, 1972.

163. _____. Solving Multi-ethnic Problems: Valleybrook for the Elementary School. New York, N.Y.: Anti-defamation League, B'nai B'rith, 1972.